

CAELUS2

ACP-2022-101

ASSESSMENT MEETING



CAELUS



PROJECTCAELUS.CO.UK



March 16th, 2023

CAELUS2 TRIALS

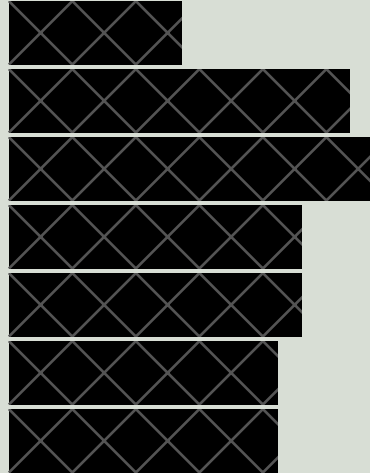
GLA-GJH Flight Agenda

(ACP-2022-101)

- 1 Introductions
- 2 Statement of Need
- 3 Issues & Opportunities
- 4 Route & RPAS Info
- 5 Process Requirements
- 6 Provisional Timeline for ACP-2022-101
- 7 Further Steps & AOB
- 8 Contacts

ATTENDEES & INTRODUCTIONS

UK CAA



CAELUS2

AGS



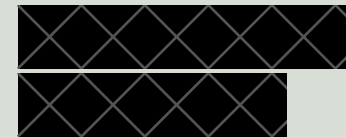
NHS



SKYPORTS



TRAX



NATS



Statement of Need

ACP-2022-101: Project Overview

The CAELUS (Care & Equity – Healthcare Logistics UAS Scotland) **consortium is led by AGS Airports Ltd on behalf of NHS Scotland** and the consortium partners and part **funded by Innovate UK through the Industrial Strategy Challenge fund, Future Flight** competition. The project which brings together AGS Airports, NHS Scotland, NATS, ATKINS, Cellnex, Connected Places Catapult and 10 other companies are working together to demonstrate the viability of a national drone network that can transport essential medicines, bloods and other medical supplies throughout Scotland. The project will deliver a Concept of Operations **(CONOPS) for the transition to fully integrated UAS operations** at a national level. This specific workstream, led by NATS will develop and publish a phased approach outlining proposed airspace constructs and detailing regulatory and technology gaps required to enable the transition. **Elements of this CONOPS will be validated** through live flight operations, differentiating CAELUS from other projects by seeking to move the industry forward by proposing and validating a method of operations that are fully integrated and sustainable.

Statement of Need

ACP-2022-101: Healthcare opportunity

With approximately **26% of Scotland's population living in remote or rural areas** spread across 69% of the land mass, service delivery can encounter constraints which contributes to treatment inequity. NHS Scotland encompassing the Territorial Boards and Scottish Ambulance Service (SAS) views the adoption of Unmanned Aircraft Systems (UAS) or drones as an opportunity to **transform the patient experience** and reduce the impact of traffic congestion and CO2 emissions. Key to this is the driver of the NHS Scotland Recovery Plan (2021) which highlights the essential need for research, innovation and redesign as integral to the recovery of NHS Services. **For both SAS and NHS Scotland equity** in the delivery of healthcare **is a key driver** for involvement in this project as NHS Scotland considers how to remobilise and redesign services to address the needs of Scotland's health and social care challenges. A current strategic directive for SHIP (Scottish Health Industry Partnership) is to grow the economy (community wealth building) and **support remobilisation, accelerating the adoption of Innovation into NHS and Social Care** (Life Sciences in Scotland, 2022). A drone-based network has the potential to **reduce mileage and produce significant time saving opportunities** improving patient experience, outcomes and equity in care delivery. As a formal partner of the consortium, NHS Scotland via lead board NHS Grampian, are providing a joined-up approach bringing input and expertise from **health boards and SAS under the "Once-for Scotland"** banner. The NHS will define and support at ground level the clinical use cases that will be flown or simulated in the live and digital demonstrations.

Statement of Need

ACP-2022-101: Informing Regulation

Today, most beyond visual-line-of-sight (BVLOS) UAS operations can only be conducted within segregated airspace. The most common way to achieve this is to establish temporary danger areas (TDAs) for the UAS to operate within. Current regulation is designed to consider a per flight basis without means to provide a scalable solution. Recognised detect and avoid capabilities are basic. CAELUS intend to **validate a developed concept of operations around airspace structure and use that is scalable and sustainable.**

Statement of Need

ACP-2022-101: Proposed Operations

We aim to **utilise volumes of segregated airspace** across Scotland in a total of 5 locations to enable us to prove elements of our proposed future concept of integrated airspace. For this proposal, we intend to fly in the immediate Glasgow Airport vicinity representing use cases for West NHS Innovation board and Scottish Ambulance Service. One aspect of the project is to **understand how UAS operations can be integrated with commercial airport operations inside Controlled Airspace** whilst ensuring minimal operational impact on the current airspace users whilst maintaining existing levels of safety. Once the appropriate procedures and associated safety assurances are developed, the intention is to **trial those procedures in a live operational environment**. The use cases will **require a Temporary Segregated Airspace (TSA)** within Glasgow CTR to be in place for a maximum of **2 weeks with expected flying during 3 days**. Our proposal is that we activate the TSA for limited duration. The TSA dimensions and duration of activation will be informed by stakeholder feedback. This segment of flying will be undertaken by Skyports. A system of **ADS-B Receivers will be deployed to demonstrate an additional layer of situational awareness** to the UAV pilot along the flying routes and contribute to the Detect and Avoid solutions that will form part of the demonstrations.

NHS Use Cases

CAELUS would enable samples and supplies to be delivered rapidly, within a time controlled window with medical grade, temperature controlled and monitored packaging

Local Chemotherapy Administration

Reduces patient travel time, stress and cost by removing the need to travel to specialist centres.

Faster blood product cross-matching

- Faster emergency treatment.
- Better patient outcomes.
- More efficient use of blood products.

Faster Lab Testing

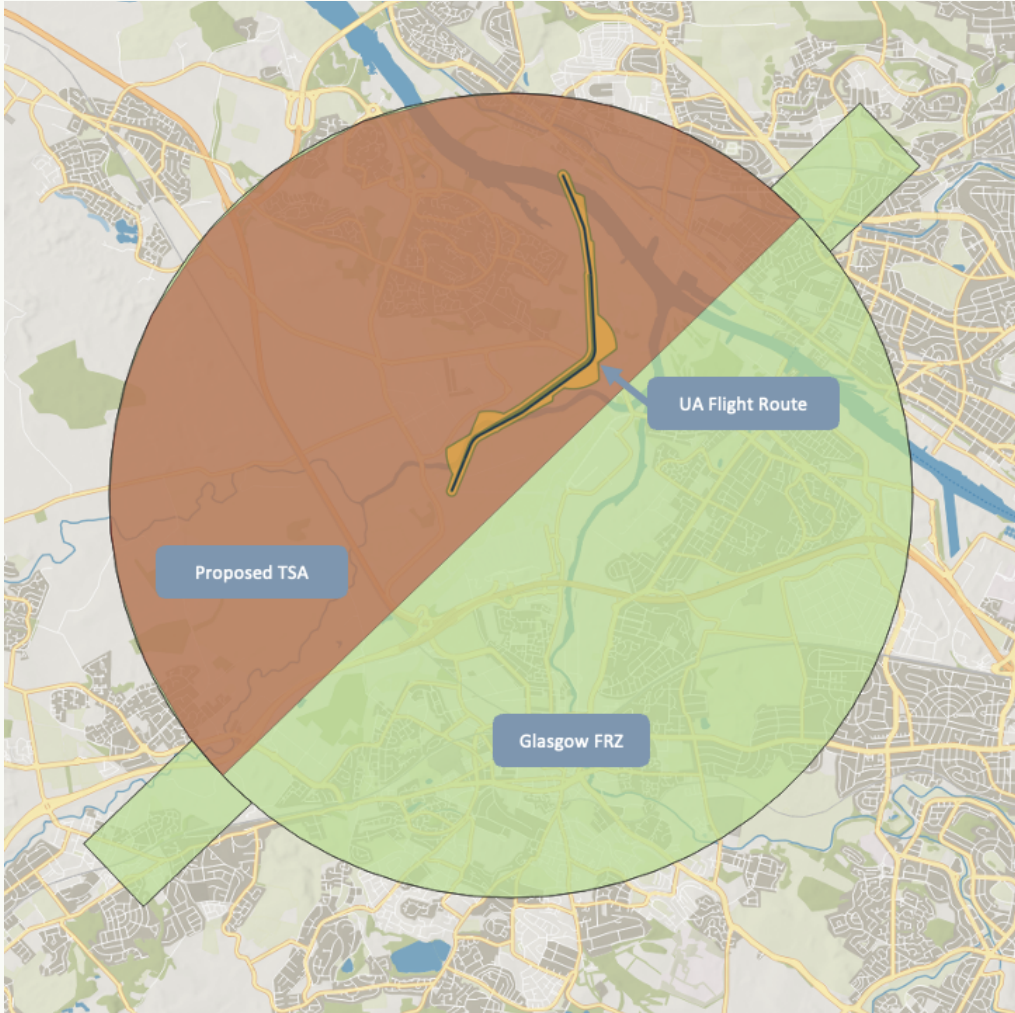
- Reduces antibiotic resistance.
- Better patient outcomes.
- Shorter hospital stay

Faster Emergency Medicine

- Better patient outcomes.
- Shorter hospital stay.



GLA-GJH ROUTE FOR SWOOP MK III



<p>- DEP/ARR: GLASGOW AIRPORT</p> <p>- ARR/DEP: GOLDEN JUBILEE HOSPITAL</p>	
<p>REQUIRED AIRSPACE AND DIMENSIONS</p>	<p>TSA - half of Glasgow ATZ, where TSA ceiling is ~1,000 ft AGL</p>
<p>REQUIRED WINDOW OF OPPORTUNITY</p>	<p>23 MAY - 2 JUNE</p>
<p>FREQUENCY OF OPERATIONS</p>	<p>3-4 Return flights across 3 flying days</p>
<p>STAKEHOLDERS APPROACHED SO FAR</p>	<p>All relevant stakeholder previously engaged. Will be provided with a pack from current UAV operator regarding flight operations and procedures</p>
<p>COMMENTS</p>	<p>Flight was part of CAELUS1, but did not happen and was moved to be in scope of CELUS2.</p>

UAV AIRCRAFT



SNOOP MK III

MTOW: 17 KG

PAYLOAD: 3 KG

CRUISE: 55 KTS IAS

RANGE: 70 KM

ROUTE: GLA-GJH

Process Requirements

Note: Temporary Change has Been Previously Proposed for Consideration

Trial Plan

Stakeholder Engagement

**Noise Impact
Assessment**

Safety Assessment



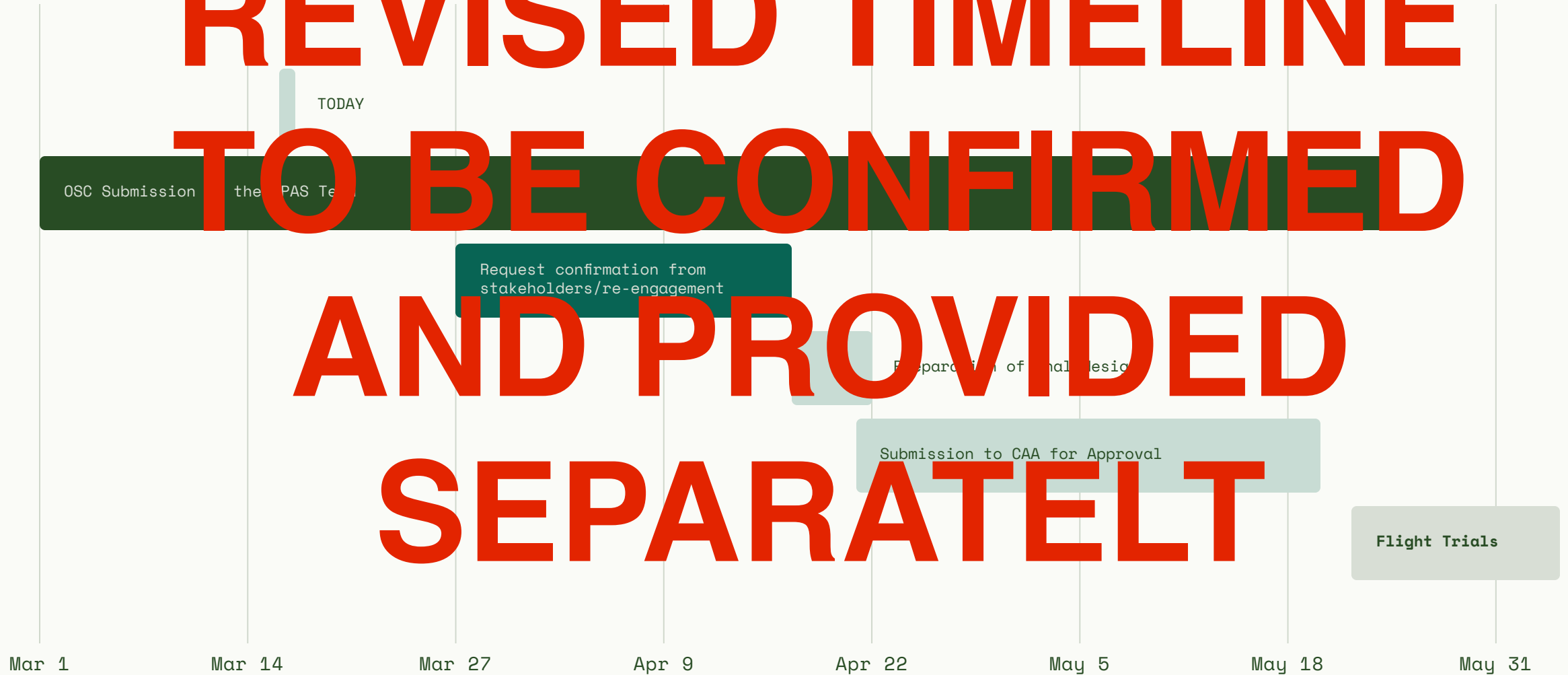
Timeline

REVISED TIMELINE

TO BE CONFIRMED

AND PROVIDED

SEPARATELY



Further Steps & AOB

CAELUS2 ACTIONS

ABC

UK CAA ACTIONS

ABC

CAELUS2 QUESTIONS

Confirmation of notification
process?

UK CAA QUESTIONS

ABC





PRIMARY CONTACTS RE ACP MATTERS

@ [REDACTED]

@ [REDACTED]

@ [REDACTED]